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(54) A simple information display device (SIDD)

(57) SIDD is a compact and portable electronic data retrieval and display unit, based on a flat screen (e.g. CRT or LCD) display, a mass storage device and microcomputer technology.

SIDD is a purpose built and ergonomically designed device suitable for displaying textual and graphical information stored on mass storage media (e.g. plug-in cartridges), as an alternative to printed matter counterparts. A key-pad allows selection of functions from a displayed menu. The display may be scrolled forwards or backwards, a line at a time or a page at a time. A Braille key-pad, synthesised voice output and colour display are also envisaged.

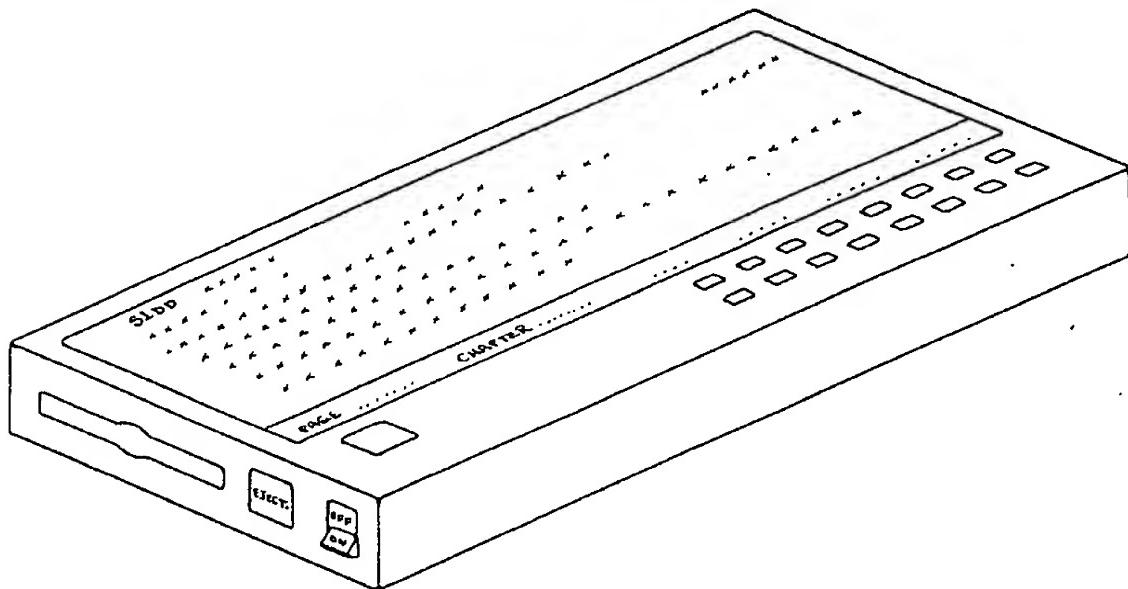


FIGURE 1

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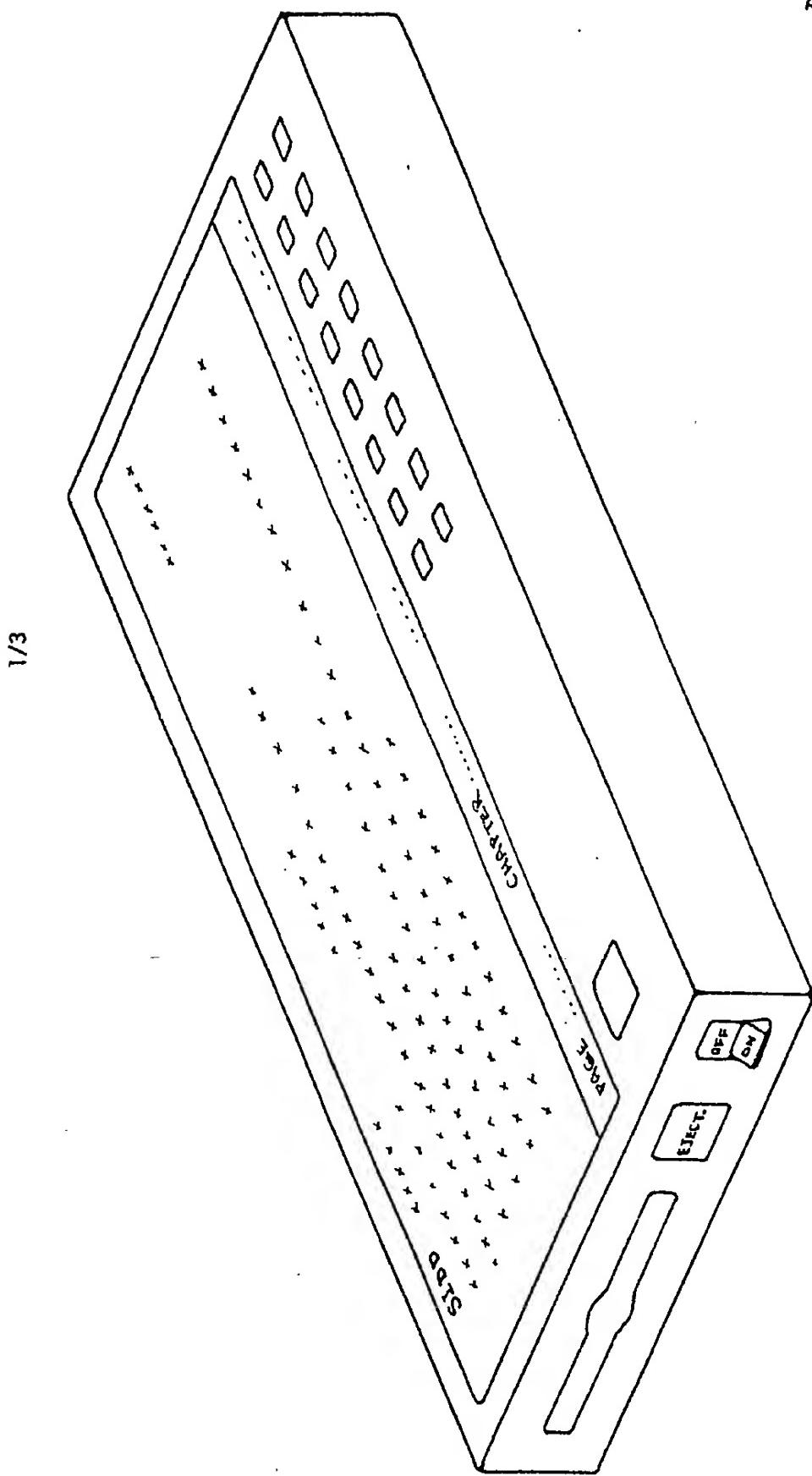
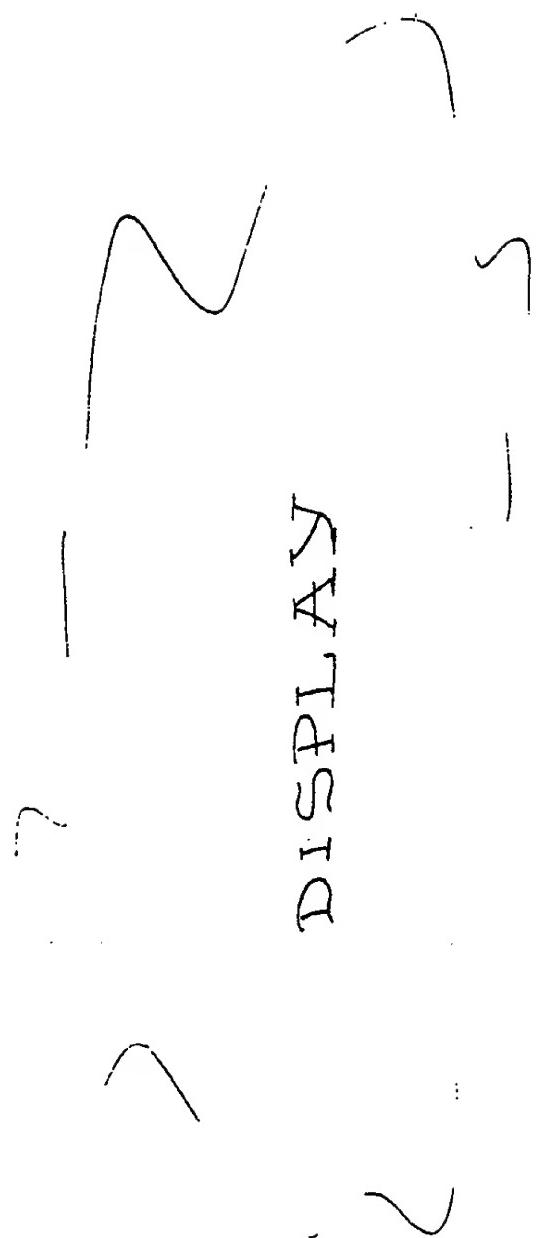


FIGURE 1 A SIDD UNIT

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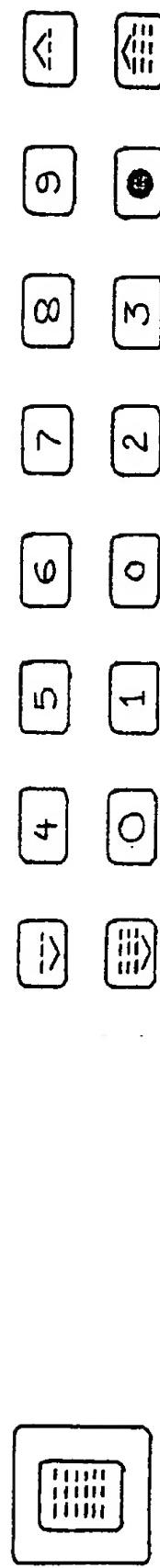


FIGURE 2 ARRANGEMENT AND DESIGNATION OF THE AD-HOC KEYPAD

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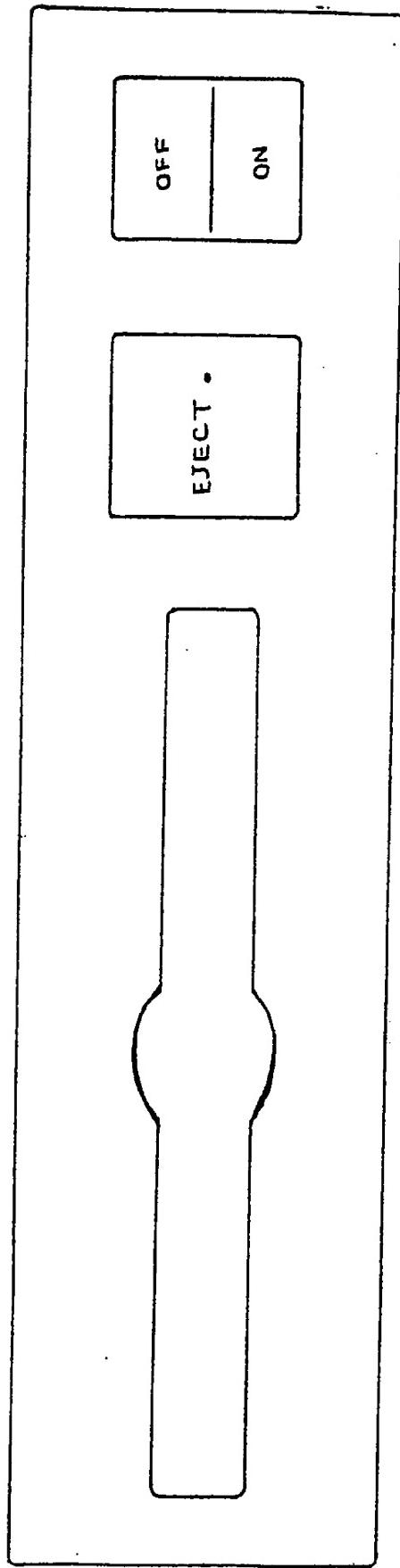


FIGURE 3 DATA CARTRIDGE PORT EJECT BUTTON ON/OFF SWITCH

SPECIFICATION

A simple information display device (SIDD)

- 5 This invention relates to a compact and portable data retrieval and display device. 5
Recent advances in the microelectronics industry have paved the way towards cheaper and faster computing devices. The personal computer sector of the market epitomises this trend.
- Despite the small size, low price and appreciable performance, most modern computing equipment especially personal computers pertain to general purpose machines. In terms of usage, typewriter style 10 keyboards and complex command repertoire of the computer operating systems have meant that most computers remain the realm of learned users.
- The combination of modern flat screen display technology e.g. Liquid Crystal Displays (LCD), compact and high capacity mass storage devices and microelectronics has led to the crystallisation of SIDD, the electronic equivalent of the printed matter.
- 15 The main emphasis in SIDD is on ad-hoc design, compact and portable size/weight and extreme ease of usage for the non-computer literate user.
- The screen is based on LCD or flat Cathode Ray Tube (CRT) technology capable of displaying text and graphics simultaneously. The screen size could range from twenty-four lines up to whatever the technology could offer in resolution and capacity within the limitations of a portable machine.
- 20 A small seventeen key, keypad (Figure 2) is fitted beneath the screen to assist the selection of desired functions from a menu. The keypad contains the digits zero to nine (0-9), 10 keys in total, and the symbols , , ,  (four keys) denoting "Line Forwards", "Page Forwards", "Line Backwards" and "Page Backwards" for display purposes respectively.
- The remaining three keys with , , and  inscriptions denote "Accept Entry", "Clear 25 Entry" and return to the "Main Menu" functions.
- SIDD also embodies a mass storage reader/playback device operated in conjunction with a microcomputer and the operating software embeded in non-volatile solid-state memories.
- The non-volatile information carrying medium (cartridge) can be of magnetic, optical or solid-state type, compatible with the type of reader employed. It is possible to easily insert or eject the cartridge thus, giving 30 SIDD the capability to present an unlimited amount of information (in contrast with the fixed information contents of the printed media).
- A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which;
- Figure 1, shows in perspective a SIDD unit.
- 35 Figure 2, illustrates the arrangement and designation of the ad-hoc keypad.
- Figure 3, illustrates the mass storage playback section with the data cartridge insertion port, eject button and ON/OFF switch.
- The unit can be powered internally via rechargeable batteries, mains operated power supply or externally, via a mains adaptor.
- 40 Upon power-up (turning the ON/OFF switch to 'ON' position when the unit is powered), the Main Menu is presented on the display. If a data cartridge is plugged in, the menu would present details about the data stored on the cartridge. It would also enable the user to select a specific part of the data on the cartridge for display.
- For example, in the case of a dictionary stored on the cartridge plugged in, the menu would offer data such 45 as title and author, contents list, indices etc. as relevant.
- Against each choice in a menu a number is presented to enable its selection by entering the number on the numeric keypad.
- Each selection may or may not lead to a sub-menu, depending on the complexity of the selected function. In the case of the dictionary in above example, upon selection of a letter, a sub-menu presenting ranges of words 50 versus page numbers would be displayed etc.
- When displaying a desired part of data, the line and page scroll keys would enable the user to go forwards or backwards in lines or pages respectively. At any stage, depression of the  key would display the Main
- 55 Menu, which in turn, would enable the user to go to the part of data on display before, as an option.
- Upon power-down, the information regarding the location in data last displayed would be saved on battery-backed solid-state memory inside the device. This would enable the user to get back to the part of the data on display before power-down, upon a fresh start.
- Furthermore, depression of the "Accept Entry" key at any stage during the display of data other than 60 menus, would command the SIDD to remember the location of data for future reference. It would be possible to refer to that part of data via Main Menu at a later stage except in the case of power-down.

CLAIMS

- 65 1. SIDD, comprising a flat screen, an ad-hoc keypad and a mass storage playback device together with 65

embedded microcomputer and the operating software stored in non-volatile solid-state memory, presents the electronic counterpart of the printed matter.

2. SIDD in claim 1 retrieves and displays data stored on a special cartridge of magnetic, optical or solid-state type.

5 3. A SIDD unit in claims 1 and 2 is capable of displaying an unlimited variety of information depending on the contents of the cartridge plugged into it, the screen size and resolution. 5

4. Information retrieval from a cartridge in claim 2 is accomplished in a SIDD set in claims 1 and 3 via interactive function menus. Functions of interest are selected from a displayed menu via entering the numeric identification code on the ad-hoc keypad.

10 10. Once a code is entered, the "Accept Entry" key must be subsequently depressed for the SIDD set to proceed further and accomplish the selected function. During the numeric code entry, depression of the "Clear Entry" key would erase all previous entries, so that another code could be entered. 10

15 5. At any instant of time when a SIDD in claims 1, 3 and 4 is operating, part of the display would be dedicated to such data as chapter title, page number and other relevant local data. The same dedicated area 15 would be used during the menu display to echo the code entry and SIDD messages as well as other relevant local data. The display might also employ backlighting or intensity control for better visibility if necessary.

6. With internal rechargeable batteries, a SIDD unit in claims 1, 3, 4 and 5 would operate for a limited length of time without the need for connection to the mains supply.

20 7. With further advances in the voice synthesis field, it would be possible to produce a talking SIDD in above claims, ideally suited for educational purposes or as a reading aid for the blind and the handicapped. In 20 the case of a SIDD set intended as a reading aid for the blind, a Brail version of the ad-hoc keypad could be provided.

8. Advances in the flat display technology would make it possible to produce colour displays in a SIDD set in above claims.

25 9. By implementing a communications port, it would be possible for a SIDD set to transmit its display data electronically to other display devices, machines or copiers. 25

10. Usage If SIDD does not require any knowledge of computing programming or entry of complex operating system commands.